SOCIAL CAPITAL AND HEALTH AT MIDLIFE AND OLD AGE: A COMPARATIVE STUDY AMONG FINNISH-SPEAKING AND SWEDISH-SPEAKING FINNS

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ABSTRACT

Background: Social capital in terms of a person's networks, engagement and trust is said to be beneficial for good health. Swedish-speaking Finns, the main cultural minority group in Finland, have been shown to possess a higher degree of social capital than their Finnish-speaking fellow citizens and they also have better health status in general. This differentiates the Swedish-speaking Finns from most other minority groups in the world. The aim of this thesis was to investigate whether higher social capital would be associated with better health of the Swedish-speaking Finns compared to the Finnish-speaking Finns among Finnish municipal employees.

Methods: This study was based on the Finnish Longitudinal study of Municipal Employees (FLAME). The baseline survey among employees of 44-58 years of age was conducted in 1981 (N=6257 of which 174 were Swedish-speaking) and the employees were followed for 28 years. Questions for three features of social capital – social ties, civic engagement and reciprocal civic trust – were identified from the surveys both at baseline and at follow-up. Respective variables were constructed as well as a summary variable called social capital which was a summary of these three features of social capital. Self-rated health and chronic diseases were used as proxies for health. Logistic regression analysis was used to study the association of different indicators of social capital and health with the language group and also with both socio-demographic and life-style related factors.

Results: This study found an association between high social capital and better health in general but not predicted by language, and an extrapolated effect of trust and civic engagement on health. Furthermore high social capital persisted even at the follow-up of the study, and those with high social capital at follow-up were likely to consider their health good. Healthy life-styles at midlife were associated with better health at old age.

Conclusions: Higher social capital was associated with better health. Swedish-speaking Finns were found to have better health in later life compared to Finnish-speaking Finns. Furthermore high social capital seems to be a lifelong feature.

Key words: Social capital, self-rated health, minorities, Swedish-speaking Finns, Finnish-speaking Finns

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

BMI	Body mass index
CI	Confidence interval
ECHI	European Core Health Indicators
FIOH	Finnish Institute of Occupational Health
FLAME	Finnish Longitudinal study of Municipal Employees
OECD	Organization for Economic Cooperation and Development
OR	Odds ratio
SRH	Self-rated health
UK	United Kingdom
WHO	World Health Organization

1 INTRODUCTION

Social capital is said to benefit those possessing it. The benefits of social capital to health have been of interest to public health research for the past four decades, and both international and Finnish research implies that an individual's high social capital is linked to his/her better health.

Health deprivation of ethnic minorities has been constituted across the world. However, there are exceptions to this rule, and one of these exceptions can be found in Finland. The Swedish-speaking Finns, the main cultural and language minority group in Finland, have a longer life expectancy than their Finnish-speaking fellow citizens and they also report better health (Nyqvist, Finnäs, Jakobsson, & Koskinen, 2007; Helakorpi et al., 2009). This observation triggered Markku Hyyppä and Juhani Mäki to investigate if the better health of the Swedish-speaking Finns could be explained by a higher degree of social capital. Hyyppä and Mäki demonstrated that the Swedish-speaking Finns had a higher degree of social capital than Finnish-speaking Finns did, and this seemed to be one explanation for their better health (Hyyppä & Mäki, 2001; Hyyppä & Mäki, 2003). Later this result has been confirmed in other studies (Nyqvist et al., 2007). The research of Hyyppä and Mäki on the relationship between social capital and health observed in the bilingual Finnish environment were the inspiration for this master's thesis.

Social capital measurement varies depending upon the study, however, most research covers the following five items: groups and networks, trust, collective action, social inclusion, and information and communication (The World Bank, 2011). In this study three dimensions used by Hyyppä and Mäki (2001), namely social ties and integrity, reciprocal civic trust and civic engagement, will be used. These dimensions cover friendship, existence of voluntary neighbourhood assistance, general trust in people, concern of people taking advantage of the respondent, and lastly participation in cultural clubs, various events, and membership in associations whether related to religion, sports, politics, social, community, culture (e.g. music, theatre, literature) or work.

The main aim of this longitudinal study was to investigate if higher social capital, which in this study was measured as social ties and integrity, civic engagement and reciprocal

civic trust, and better health of the Swedish-speaking Finns compared to the Finnish-speaking Finns would be observable among the employees of the Finnish Longitudinal study of Municipal Employees (FLAME). Moreover, this study also assessed socio-demographic and life-style difference of the Finnish-speaking and Swedish-speaking group of populations in FLAME as well as the difference in their self-rated health, chronic diseases and social capital characteristics.

2 REVIEW OF LITERATURE

The literature review was conducted using the Nelli Portal (National Electronic Library Interface) provided by the University of Tampere. The systematic search was conducted in the following databases: Annual Review of Social Sciences, ARTO, Medic, MEDLINE (Ovid), PubMed (MEDLINE), Social Sciences Collection (ProQuest), Social Services Abstracts (ProQuest), Web of Science (ISI) (Web of Knowledge), EBSCOhost Academic Search Premier, and Melinda. Only the relevant texts, both abstract and the full texts, were reviewed.

2.1 What is Social capital?

Even though social capital was occasionally mentioned in economic and societal discussions already in the 19th century, the major theories of social capital were published in the 1980's and early 1990's by Pierre Bourdieu, James Coleman and Robert D. Putnam. The latter praises Coleman of setting the main theoretical framework for social capital (Ruuskanen, 2001; Putnam, 1995). As Markku T. Hyyppä, who is one of Finland's foremost researchers and popularizicers of social capital, concludes all the main social capital theorists consider social capital as a resource which increases societal democracy and well-being (Hyyppä, 2002).

The three features of Coleman's social capital are reciprocal trust, flow of information, and norms. Reciprocal trust ensures the return of favours in one's network, good flow of information in the network supports the individual in reaching one's goals, and norms advance the network's common good instead of individual benefit (Ruuskanen, 2001).
Putnam, along the lines of Coleman, defines social capital as "features of social organization, such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit", and he goes on writing as follows:

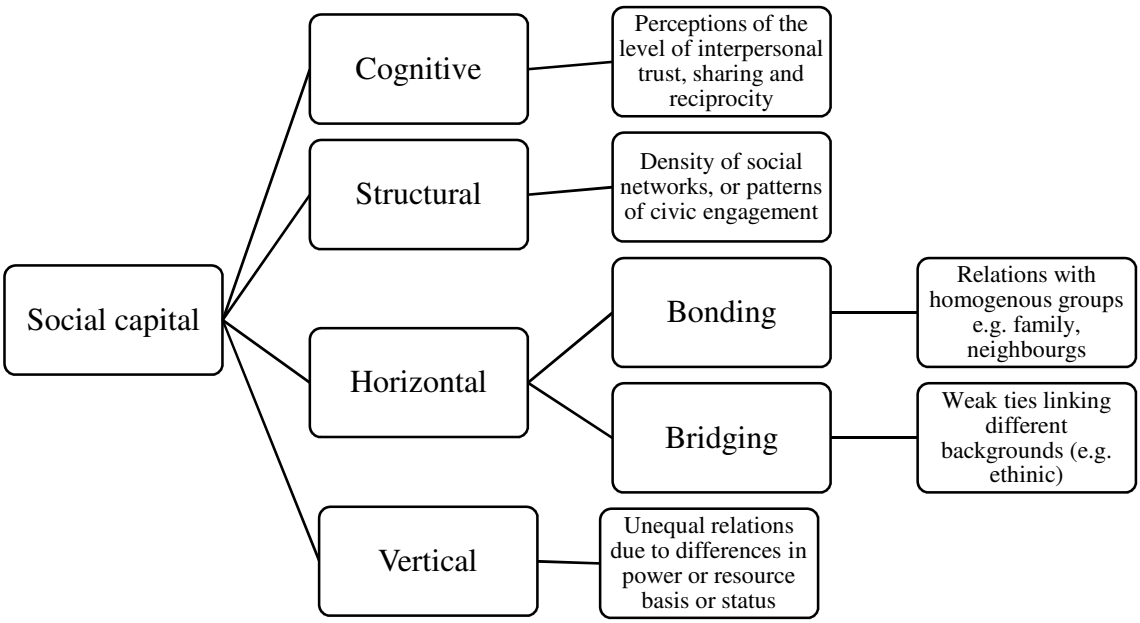
> *For a variety of reasons, life is easier in a community blessed with a substantial stock of social capital. In the first place, networks of civic engagement foster sturdy norms of generalized reciprocity and encourage the emergence of social trust. Such networks facilitate coordination and communication, amplify reputations, and thus allow dilemmas of collective action to be resolved. When economic and political negotiation is embedded in dense networks of social interaction, incentives for*

> *opportunism are reduced. At the same time, networks of civic engagement embody past success at collaboration, which can serve as a cultural template for future collaboration. Finally, dense networks of interaction probably broaden the participants' sense of self, developing the "I" into the "we," or (in the language of rational-choice theorists) enhancing the participants' "taste" for collective benefits* (Putnam R. , 1995).

The concept of network is also part of Bourdieu's definition of social capital but the focus is on "I" not "we". According to Bourdieu the individual's membership in a network will benefit the individual with respect and trust or credit which can be reimbursed as favours but can also be transferred into economic capital (Ruuskanen, 2001).

From the above rather top-level definitions of social capital, the term has been conceptualized further. As outlined in Figure 1 components of social capital are generally divided into four: structural, cognitive, vertical, and horizontal social capital. Horizontal social capital can be further divided into bonding and bridging social capital as proposed by Putnam (Putnam, 1995; Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006; Kawachi, Subramanian, & Kim, 2008; Thurston, 2014). However, for the current study a top-level understanding of the concept of social capital is sufficient and thus the further conceptualization of the term will not be discussed in further detail.

Figure 1. *Forms and dimensions of social capital as outlined by Islam et al., 2006*



The current study summarizes social capital from three features: social ties and integrity, reciprocal civic trust, and civic engagement. This follows the Putnamian social capital approach which has been influential in public health (Thurston, 2014). The Putnamian approach has also been adopted by Markku T. Hyyppä who refers to social capital as the "we spirit" (Finnish me-henki) (Hyyppä & Mäki, 2001; Hyyppä, 2002; Hyyppä, 2005).

2.1.1 Measuring social capital

As a result of the interest in social capital, the interest in how to capture and measure it increased in the beginning of the 21st century (Iisakka, 2004). Not only researchers and governmental bodies have been keen on developing ways to measure social capital but also global institutions such as the World Bank and OECD have been looking into its measurement with the additional interest to enable cross-country comparisons of social capital which have been a challenge due to the variety in its measurement (Thurston, 2014). In general social capital measurement tools measure groups and networks, trust, collective action, social inclusion, and information and communication (The World Bank, 2011).

In addition to prospective measurement of social capital there has been an interest to retrospectively capture social capital in already conducted research. For example in Finland this has been done based on the UK's National Office of Statistics' (ONS) model in which previously conducted Finnish research has been evaluated for social capital based on the following five dimensions: participation; control and stability; observation of community level structures and features; social interaction, networks and support; and trust, reciprocity and social cohesion (Iisakka, 2004)

The retrospective model was also used by Putnam in his "Comprehensive Social Capital Index" from 2000, which contained five dimensions called components, namely community organizational life, engagement in public affairs, community volunteerism, informal sociability and social trust (Putnam, 2000). Each of the components of Putnam's index consisted of two or more measures which had been captured in previous studies and which reflected in total fourteen formal and informal community networks and social trust as listed in Appendix 1. Of these fourteen measures agreeing with "Most people can be trusted" was the one which had the closest correlation to the index. The correlation

was almost as strong when the respondent had served on a committee of the local organization with the past year. The lowest correlation was linked to entertaining friends at one's home (Putnam, 2000).

Hyyppä and Mäki (2001) assessed social capital prospectively with three dimensions: social ties and integrity, reciprocal civic trust and civic engagement. For social ties and integrity three items related to friendship (amount of friends, local friends, and auxiliary friends) and one item relating to the existence of voluntary neighbourhood assistance were assessed. Two items were used to assess reciprocal civic trust, one of which assessed by the Putnamian example general trust in people, and the other the concern of people taking advantage of the respondent. For the last dimension, civic engagement, Hyyppä and Mäki inquired about the participation in cultural clubs, various events, and membership in associations. The civic engagements could be related to religion, sports, politics, social, community, culture (e.g. music, theatre, literature) or even work (Hyyppä & Mäki, 2001).

The latest national health surveys of Finland, Health 2000 and Health 2011, have also assessed social capital from the Putnamian perspective with four questions dealing with organizational activity (civic engagement), social ties, trust and reciprocity (Nieminen, Martelin, & Vaarama, 2012). The same variables also form the basis of work place specific social capital assessment tool created in Finland (Oksanen, 2009).

2.2 Health

2.2.1 Determinants of health

The social and economic environment, the physical environment, and the person's individual characteristics and behaviour-patterns are commonly clustered as being determinants of health. This means that they will have an effect on the individual's health for the better or for the worse (World Health Organization, 2014).

A key determinant of health is income and the evidence on its effect on health is straightforward: the lower the income, the lower the health. This finding applies also to

other determinants of health including social exclusion and social support networks which in addition to income are determinants linked to the social and economic environment. As a brief summary it can be stated that "those who are worse off socio-economically have worse health" (Shaw, Dorling, & Smith, 2006).

Socio-demographic factors

Age, gender, education and marital status were the four socio-demographic determinants of health included in the study. Research has shown that education extended to high school and beyond is related to better health (Palosuo, 2007). Furthermore it has been demonstrated that the Swedish-speaking Finns have a higher level of education than the Finnish-speaking Finns (Finnäs, 2001; Saarela & Finnäs, 2003).

Of the other socio-demographic factors included in the study being married has been associated to better health in both Finnish and international studies (Joutsenniemi et al., 2006; Cott, Cignac, & Bradley, 1999). The same applies to age: the younger the better the health (Koskinen, Lundqvist, & Ristiluoma, 2012; Cott et al., 1999).

The genders seem to be rather equal when it comes to health either from self-rating it or looking at chronic disease in the Finnish population (Koskinen et al., 2012). The evidence in general is inconclusive and there is both research in men reporting lower health (Taloyan, Leineweber, Hyde, & Westerlund, 2014) and better health (Cott et al., 1999) than women.

Life-style

Behavioural i.e. life-style determinants, such as eating and drinking habits, exercise and smoking, are widely acknowledged of being linked with income, and also strongly impact health (Marmot & Wilkinson, 2006). In the current study one of the aims is to determine the difference in life-style related characteristics of Finnish-speaking and Swedish-speaking employees by assessing the difference of smoking and drinking frequencies in addition to weight and exercise activity of the study subject.

Smoking

In Finland the number of smokers has declined strongly from 2000 until 2011. Of the working age population about 20% smoke daily whereas in the aged population of over 75 years smoking is rare: of the men almost 95% did not smoke at all and of the women the respective amount was almost 98% (Koskinen et al., 2012). Research between the Swedish and Finnish-speaking Finns demonstrates that both Swedish-speaking men and women smoke less than their Finnish-speaking counterparts (Helakorpi et al., 2009).

Use of alcohol

In 2011 more than one third of Finnish working aged men use alcohol once or more a week and this is 10-15% more than respective aged women. The amount of people who do not use alcohol at all increases with age and is currently around 20% in the Finnish middle-aged working population (Koskinen et al., 2012). Studies comparing the alcohol consumption of Finnish-speaking Finns and Swedish-speaking Finns have shown that in general the Swedish-speakers drink slightly less alcohol than their fellow Finnish-speakers (Helakorpi et al., 2009).

Weight

Internationally Finland has a high number of obese people as every fourth Finn is overweight (body mass index, BMI >30) and only 30% of men and 40% of women are of normal weight (BMI < 25) (Koskinen et al., 2012). In Finland the difference in BMI between language groups has been found to be non-significant in general but Swedish-speaking men are less overweight than their Finnish fellow-citizens (Helakorpi et al., 2009).

Physical exercise

More than half of Finns exercise too little and only about 10% exercise enough i.e. 3 times weekly equally divided between endurance, balance and muscle strength to main an adequate physical condition (Koskinen et al., 2012). During the period 1990 – 2007 both Swedish and Finnish-speakers increased their amount of weekly exercise. For women both language groups exercised equally but for men it seems that the Swedish-speakers were less active (Helakorpi et al., 2009).

2.2.2 Assessment of health

Self-rated health, also referred to as perceived health, together with the existence of chronic diseases are in this study used as proxies for health.

Self-rated health

In addition to biomarker and physical examination based health assessment, individuals are commonly asked to rate their own health. Self-rated health is a commonly used measure of health, which reflects the respondent's own understanding of his or her health, and is also one of the 88 European Core Health Indicators (ECHI) used by the European Union (European Commission, 2015) .

The majority of people rate their own health as being good, and from the longitudinal perspective the health of Finns has been improving over the past four decades (Heistaro, Vartiainen, & Puska, 1996; Koskinen et al., 2012). Several studies have proven that Swedish-speaking Finns report having better health than their Finnish-speaking fellow-citizens (Nyqvist et al., 2007; Helakorpi et al., 2009).

Good self-rated health is strongly associated with higher educational attainment (Kunst, et al., 2005; Rahkonen, et al., 2007). Those with healthy lifestyles i.e. non-smokers with low consumption of alcohol who exercise and maintain a healthy diet also report better self-rated health, as well as people who are younger and less obese (Pisinger, Toftf, Aadahl, Glümer, & Jorgensen, 2009; Foraker et al., 2011). Good self-rated health is also associated with being married (Joutsenniemi et al., 2006; Cott et al., 1999).

The data on the relationship of self-reported health and gender is conflicting. However, in one of the most recent studies working age men were most likely to rate their health lower than women (Taloyan et al., 2014).

The rating of health becomes poorer when the individual has chronic diseases (Cott et al., 1999; Molarius & Janson, 2002).

Chronic diseases

Chronic diseases are also one of the core ECHI indicators for health (European Commission, 2015). In Finnish health studies, people have been asked to report the existence of chronic diseases since over half of a century. From the longitudinal perspective the number of people reporting chronic diseases has decreased during the years. It is also evident that the older people are the more chronic disease they have and 70% of people over 75 years old report having a chronic disease (Koskinen et al., 2012). There is evidence that the Swedish-speakers would have less chronic diseases than the Finnish-speakers (Hyyppä & Mäki, 2001).

As mentioned earlier the existence of chronic disease results in a poor self-rated health (Molarius & Janson, 2002). Also life-style factors – smoking, use of alcohol, lack of exercise and obesity – have been shown to be linked to chronic disease (Fortin, et al., 2014). Lower educational attainment is strongly associated with the existence of chronic disease (Mielck;Vogelmann;& Leidl, 2014). Among the other socio-demographic characteristics, chronic disease was less associated with the male gender, being young and married (Cott et al., 1999).

2.3 Social capital and health

During the past four decades social capital has become a central part of the public health discussion (Thurston, 2014). This has resulted in an increasing number of research investigating the association between health, expressed for example as self-rated (perceived) health and social capital both internationally and in Finland.

2.3.1 International studies

Based on American data from the early 1990's Kawachi et al. concluded that the existence of social capital results in health advantages and this was confirmed by Robert Putnam (Kawachi, Kennedy, & Glass, 1999; Putnam, 2000). In the mid-2000 a similar conclusion was done based on an analysis of 42 articles published between 1995 and 2005 which discussed the relationship between health and social capital (Islam et al., 2006). These

findings have been further supported by 28 international publications dating from 2000 to 2007 which specifically studied the relationship between self-rated health and social capital. Based on a meta-analysis conducted on the results of the 28 publications encompassing high social capital increased the odds of good health by 29% (OR 1.29, 95% CI = 1.21 – 1.37) (Gilbert, Quinn, Goodman, Butler, & Wallace, 2013).

The outcomes quoted above are supported by the most recent studies observing the connection of social capital and health which conclude that social capital has a positive impact on an individual's health whether observed in general or from other perspectives such as neighbourhoods and gender (Groenewegen, Voker, & Flap, 2011; Eriksson, Ng, Weinehall, & Emmelin, 2011; Giardano, Björk, & Lindström, 2012; Ahnquist, Wamala, & Lindström, 2012; Rocco & Suhrcke, 2012). Additionally, there is evidence that social capital has a more positive influence on the health of the aged than the health of the young (Muckenhuber, Stronegger, & Freidl, 2013). The positive effect of social capital on health is more pronounced in women than in men, and in more trusting and affiliated individuals (Elgar, et al., 2011).

The international body of evidence supporting a positive association between social capital and health is extensive but not without critique. Veenstra (2000), for example, has studied a Canadian population with the conclusion that little evidence exists on the effect of social capital on health.

2.3.2 Finnish studies

Markku Hyyppä and Juhani Mäki concluded that the better health of Swedish-speaking Finns compared to their Finnish-speaking fellow citizens is attributable to the higher social capital of the Swedish-speakers (Hyyppä & Mäki, 2001; Hyyppä & Mäki, 2003). The finding of Hyyppä and Mäki has been since confirmed in other studies and the conclusion remains: social capital can be used to explain the difference of health between the two main Finnish language groups (Nyqvist et al., 2007).

The Finnish studies on the association between health and social capital are not restricted only to exploring the difference of these variables between the main Finnish language groups. One of the largest studies to date has been the Health 2000, based on which, it

was concluded that "the more people have social capital i.e. participation, trust and social support, the better they perceive their health" (Lehtinen, 2006). Looking at the different features of social capital, the Health 2000 data supported the viewpoints that good self-rated health is seen more in socially active people than the passive ones, and also in the people who trust others (Lehtinen, 2006). This outcome is supported by the recent Health 2011 results in which outcomes for the social capital variables – apart from networks – had better outcomes than in 2000 and also the health of Finns had improved (Nieminen et al., 2012).

Further Finnish publications have discussed the association of self-rated health and social capital. These include studies which have explored social capital as a determinant of health in general (Nieminen et al., 2010; Nieminen et al., 2013), in the ageing population (Nummela, Sulander, Karisto, & Uutela, 2009), and across older adults in the Nordic region (Nyqvist & Nygård, 2013; Nyqvist, Nygård, & Steenbeek, 2014). All of these studies support the notion that social capital and self-rated health are linked, and the influence of social capital on self-rated health is positive.

Nieminen et al. (2013) also studied the association of self-rated health, health behaviours and the different features of social capital. Based on the research, civically engaged individuals had healthier life-styles: they smoked and drank less alcohol but exercised more than the less civically active ones. Trust was strongly associated with not smoking, slightly less with moderate alcohol use and barely at all with physical activity. Social support – in this thesis expresses as improved social ties – on the contrary did not have a significant impact on any of the listed life-style variables. In the study, self-rated health was associated with high levels of all the features of social capital, and association was strongest with those who were actively involved in the society.

2.4 Minorities, health, and social capital

2.4.1 Minorities

Minorities are defined as being culturally, ethnically, or racially different from a group often referred to as the majority which has more members and relative power than the minority in the area they coexist e.g. a community or country. Also immigrants are regarded as minorities, and all minorities are at risk of social exclusion (Shaw et al., 2006).

The most notable minority in Finland is the language minority of Swedish-speakers who currently account for 5.3% of Finns (Statistics Finland, 2014).

2.4.2 Minorities and health

In most cases minorities, including immigrants, have been deprived of wealth. As poverty is a determinant of ill health, minorities tend to be less healthy than the majority, an observation which is supported by several studies across Europe and the US (Kawachi et al., 1999; Hyyppä, 2002; Hyyppä, 2005; Shaw et al., 2006; Nazroo & Williams, 2006).

However, exceptions to this rule exist and the most notable exceptions come from Japan and Finland. Okinawans, a Japanese minority from the island of Okinawa, have been oppressed for centuries but despite of that they are the people with low morbidity and the longest life-span in the world (Hyyppä, 2002).

In Finland the Swedish-speaking Finns, even though not oppressed as the Okinawans, are a minority whose health is better than the health of the majority both objectively, as self-assessed and judging from the determinants of health, and they also live longer than their Finnish-speaking fellow citizens (Helakorpi et al., 2009; Suominen, 2014).

2.4.3 Minorities and social capital

Based on the quoted research on the association of social capital and health (chapter 2.2) and the notion of minorities being less healthy, a logical conclusion would be that minorities also have lower social capital. This hypothesis has been supported by studies observing the social capital of immigrants (Hyyppä, 2002; Hyyppä, 2005). Some recent evidence to this notion comes also from Israel where research showed that individual social capital was associated with better self-rated health mainly in the Jewish population, the majority in Israel, and less so in the minority population of Arabs, thus the minority had less social capital and their health was worse (Baron-Epel, Weinstein, Haviv-Mesika, Garty-Sandolon, & Green, 2008).

As in the case of minorities and health, exceptions to this rule exist and the same examples apply, namely in Japan and Finland two minority groups have high social capital in addition to good health. As stated by Hyyppä (2002) the health promotional effect of communalism (network of interaction, trusted friends, and voluntary work) promoted the health of the Okinawans in Japan. Hyyppä's major research has focused on investigating what determines the better health of Swedish-speaking Finns and based on his and other research social capital is a major determinant of health for the language minority group of Swedish-speaking Finns (Hyyppä & Mäki, 2001; Nyqvist et al., 2007).

3 RESEARCH AIM

The main aim of this study was to investigate if higher social capital and better health, expressed either as self-rated or as chronic diseases, of the Swedish-speaking Finns would be observable among the employees of the Finnish Longitudinal study of Municipal Employees (FLAME). The second aim of this thesis was to study the socio-demographic and life-style difference of the Finnish-speaking and Swedish-speaking group of populations in FLAME as well as the difference in their self-rated health and chronic diseases.

The specific objectives of the study were:

1. To determine the differences in demographic and life-style related characteristics of Finnish-speaking and Swedish-speaking employees.
2. To assess the differences in health and indicators of social capital between Finnish and Swedish-speaking employees at baseline and after 28 years of follow-up.
3. To examine how the language group predicts good self-rated health, chronic diseases, and indicators of social capital.

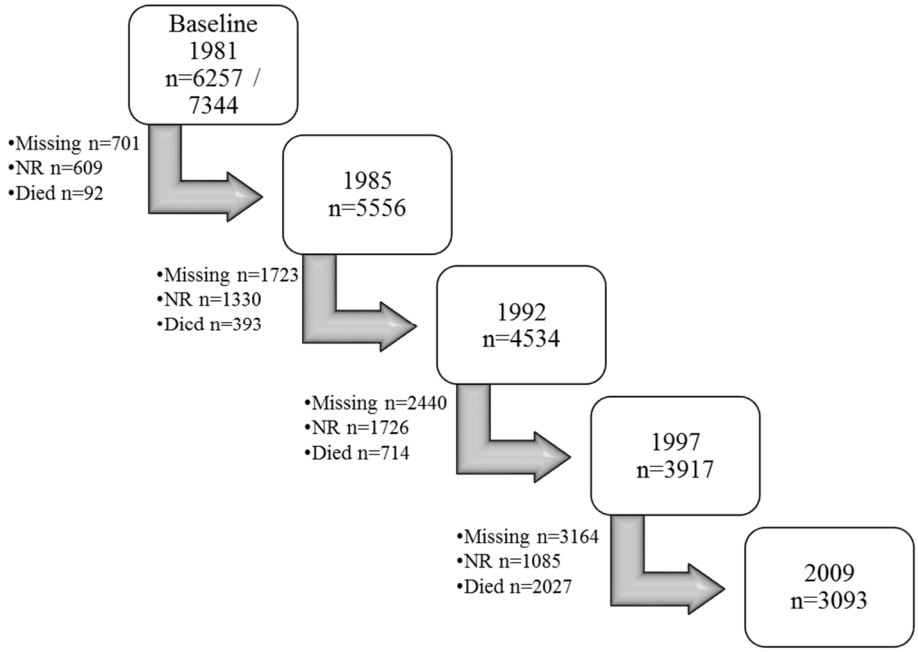
4 MATERIALS AND METHODS

4.1 Material

The material for this thesis was based on the longitudinal data from the Finnish Longitudinal Study on Municipal Employees (FLAME). The FLAME study conducted by the Finnish Institute of Occupational Health (FIOH) has been following up ageing municipal workers across Finland for 28 years by obtaining data with means of postal questionnaires in 1981, 1985, 1991, 1997, and 2009. Data has been gathered to assess work, health, work ability, functional capacity and perceived strain, and based on the conducted analysis recommendations have been drafted on how to maintain the work ability and improve work of ageing workers (Ilmarinen, et al., 1991).

In 1981 the baseline questionnaire was sent to 7344 currently working municipal employees born between 1923 and 1937(45-58 years of age), and of these 6257 (85.2%) responded and 88.8% of these respondents responded in 1985 (Tuomi, Ilmarinen, & Klockars, 1997). By the time of the last follow up in 2009 the number of respondents had decreased to approximately half of the original respondents with 3093 persons aged 72 – 86 returning the questionnaires. Figure 2 below illustrates the number of responders to each questionnaire and the reason for change in responders which was either due to unknown address (labelled missing), not responding (NR) or death.

Figure 2. *Respondents to the FLAME questionnaire from baseline in 1981 until 2009.*



The FLAME data was chosen as the basis of the study because it was of interest to investigate if the data could also be used to assess social capital, its implications on health, and possible differences between two Finnish language groups, the Finnish-speaking Finns and the Swedish-speaking Finns. To elaborate this in the present study FLAME data from 1981, 1985, and 2009 was analysed. The data from the 1980's constitutes the baseline data of the present study and the 2009 data, being the latest available one, is used as the follow-up.

4.2 Study population

The study population consisted of respondents to the FLAME questionnaires in 1981, 1985, and 2009. For the analysis the study population was grouped into two based on their maternal tongue. Of the baseline respondents 5975 (95%) were identified as speaking either Finnish or Swedish as their maternal tongue, the number of Swedish-speaking Finns being 186 (Table 1). In the follow-up study in 2009 the numbers of respective respondents were 2133 and 64 (Table 3). At both time points, the proportion between the speakers was the same: Finnish-speakers constituted for 97% of the respondents who disclosed their language and Swedish-speakers 3% which is a bit lower

than the current 5.3% national proportion of Swedish-speakers (Statistics Finland, 2014). Respondents who failed to be identified with a maternal tongue were excluded from the analysis.

4.3 Measurement of Variables

4.3.1 Health

Health was measured with two self-reported items, self-rated health and chronic diseases, which were included in the questionnaires both at baseline and in 2009.

Self-rated health

One of the main outcome, self-rated health was measured with a question "Compared to your friends of the same age, is your health much better, slightly better, the same, slightly worse or much worse". For the descriptive analysis (Tables 2 and 3) the categories were reduced to three by combining much and slightly better into good health, the same into moderate health and slightly and much worse into poor health. For the logistic regression analysis the variables were dichotomized by combining the poor and moderate into one category whereas good health remained as defined for the descriptive analysis.

Chronic diseases

The existence of chronic disease was determined also by self-assessment. The respondents were asked to answer the following question: "Do you currently have some chronic disease, defect or injury?". The answers we simply no and yes, and they could be as such used for the descriptive and logistic regression analysis.

4.3.2 Social capital variables

The social capital variables of interest were private life social capital indicators only. In the study the social capital variables were constructed to reflect features Hyyppä and Mäki used for assessing social capital i.e. social ties and integrity, reciprocal civic trust, and civic engagement (Hyyppä and Mäki, 2001). Each of these social capital variables were constructed from the FLAME questionnaire questions which were assessed to reflect the specific feature in an equal manner both at baseline (1981 and 1985) as well as in the follow-up study in 2009. The construction of each of these variables and the summary variable of social capital are described below.

Social ties and integrity

Hyyppä et al explained that social ties and integrity would consist of friendship and voluntary neighbourhood assistance (Hyyppä and Mäki 2001). In the FLAME questionnaires these topics were addressed varyingly across the selected time points, and voluntary neighbourhood assistance could only be observed in a question in 2009. Therefore this feature was not used to construct the variable for this study.

For friendship a similar set of questions was used both at baseline and in 2009. The questions "Have some of the following events occurred recently in your life: a) You have lost a close friend; b) There have been severe conflicts in your close relationships; c) Your relationships have improved considerably; d) You have found a new close friend" formed the basis for the variable for the study. Points c and d from this set of questions were used to construct the variable social ties and integrity. Based on the answers, those who had either improved relationships or a new friend or both formed the reference group. The resulting dichotomous variable was used for both the descriptive and the logistic regression analysis.

Reciprocal civic trust

Trusting people and a person's concern of exploitation by other people were the features Hyyppä et al. used for assessing reciprocal civil trust (Hyyppä and Mäki 2001). In the assessment of the questionnaires from 1981, 1985 and 2009 no question contained the element of exploitation. The question "Is there a person in your close circle with whom you can openly discuss your personal topics and problems?" from the 1985 and 2009 questionnaires was used as a proxy for trust. The response options to the question were no, yes, and can't say, and this categorization was also used for the descriptive analysis (Tables 2 and 3). For the logistic regression analysis the variables were dichotomized by combining the "no" and "cannot say" responses into "no".

Civic engagement

Civic engagement as assessed by Hyyppä et al consisted of participation in cultural clubs whether singing, acting, dancing or playing in band, attendance in events, and membership in associations (Hyyppä and Mäki, 2001). In questionnaires from 1985 and 2009 there were questions which assessed associational, artistic, religious, and handicraft activity, and in 2009 one additional question assessed active art hobbies such as choir singing and acting. The perspective of the questions was slightly different between the questionnaires: in 1985 the question of interest was how much satisfaction do the study subject get from these activities and in 2009 the perspective was the amount of activities.

The response options to the question in 1985 was no satisfaction/no activity, some satisfaction, quite some satisfaction, and a lot of satisfaction. For the descriptive analysis (Tables 2 and 3) the answers were regrouped into three categories of which the "no" and "some" satisfaction groups formed the group "almost never". For the logistic regression analysis the variables were dichotomized by combining the "quite some" and "a lot" responses which were then compared to the already combined group "almost never".

In the 2009 questionnaire the response options were daily, once or twice, less, and not at all. According to the respective regrouping of the 1985 responses, these were regrouped into three categories of which the "less" and "not at all" groups formed the group "almost

never" for the descriptive analysis (Tables 2 and 3). For the logistic regression analysis the variables were dichotomized by combining the "daily" and "once or twice" responses which were then compared to the already combined group "almost never".

Social capital

For one analysis a dichotomized summary variable called social capital was constructed from the previously dichotomized variables for social ties and integrity, reciprocal civic trust, and civic engagement. If for the previous categorization the individual was in the "yes" category for any of the listed three social capital features, this was considered to be a sign of existing social capital and formed the reference group. Those who had neither social ties nor integrity nor reciprocal civic trust nor civic engagement were grouped into the "no social capital" group.

4.3.3 Socio-demographic and life-style variables

The socio-demographic variables included in the analysis were age, gender, education, and marital status. At baseline age, education and marital were defined as follows:

- Age was categorized into three groups: 44-48, 49-53, and 54-58.
- Educational attainment was dichotomized so that those who had completed at least high school i.e. 12 years of education formed the reference group. Respondents without education, with only compulsory education and some education beyond that on the intermediate level were grouped into the less than high school group.
- Marital status was dichotomized so that the reference group married consisted of people who at baseline were either married or co-habiting. The group single/others contains those who were single, widows, divorced or living separately from their spouse.

The life-style variables included body mass index (BMI), physical exercise, alcohol use and smoking. These were categorized as follows:

- BMI, calculated on the basis of self-reported height and weight, had three categories: normal weight with BMI below25.0, slightly overweight with BMI of 25 or more but below 29.9, and obese with BMI of 30 or above.
- Physical exercise was defined of 15-20 minutes of activity which lead to shortness of breath. For the study exercise was grouped into 3 categories: light, moderate and vigorous. The respondents who did exercise more than 2 times a week were grouped into the vigorous group, the moderate group consisted of people exercising once or twice weekly, and the light exercise group either did exercise occasionally but not weekly or did not exercise at all.
- Alcohol users had to consider the frequency of their alcohol usage so that they felt being at least a little intoxicated. On the basis of the response three groups were formed: those who never used alcohol i.e. never felt intoxicated, those who used it twice or less per month and those who used it once or more per week.
- For smoking, the categorization was clear: those who had never smoked formed the reference group whereas those who had smoked in the past or were currently smoking were clustered into a group “past or current smoker”.

The categorization of the variables was done in the same way as the respective variables have been categorized in other studies using the FLAME data.

A descriptive analysis of the socio-demographic and life-style variables for both language groups at baseline is in Table 1.

4.4 Statistical analysis

For the first part of the study, an analysis to compare the selected baseline socio-demographic and life-style characteristics of the language groups, the Swedish-speaking Finns and the Finnish-speaking Finns, was conducted to assess if there were any significant differences between the groups. A similar descriptive analysis was conducted on the previously described health and social capital characteristics of the language

groups at baseline and for the follow-up population. The chi-square test was used to measure the significance of the difference between language groups.

For the second part of the study, logistic regression analysis was used to evaluate the association of good self-rated health and different indicators of social capital with language group and various other factors. Odd ratios (OR) with their 95% confidence intervals (CI) was calculated for good self-rated health and different indicators of social capital due to the language group followed by demographic and other life style variables. Three sequential logistic regression models were calculated. In the first model, crude odd ratio for an outcome variable was calculated. For the second model baseline socio-demographic variables were added in the first model. For the third model all studied variables were added together with the language variable to see the adjusted OR in the final model.

SPSS for Windows statistical software (versions 21 and 22) was used for all the analyses.

5 RESULTS

5.1 Characteristics of the language populations

Table 1 contains the baseline demographic and life-style characteristics of studied FLAME population. There were no significant differences between the language groups at baseline except for two characteristics: education and smoking. The Swedish-speaking Finns had more often higher educational attainment and they also had a higher level of smoking activity than the Finnish-Speaking Finns.

Regarding the health and social capital characteristics outlined at baseline in Table 3 and at follow-up in Table 4, the only significant finding was that Swedish-speakers reported a lower number of chronic diseases at the follow-up than the Finnish-speakers. Regarding self-reported health and the social capital characteristics there were no significant differences between the two language populations neither at baseline nor at follow-up.

Table 1: Baseline (1980) socio-demographic and life-style characteristics of study participants stratified by language group

Characteristic	N=5975†	Language group N (%)		
		Finnish N=5801	Swedish N=174	*P*-value
Age				0.652
44-48	2068	2013 (34.7)	55 (31.6)	
49-53	2492	2413 (41.7)	74 (42.5)	
54-58	1415	1370 (23.6)	45 (25.9)	
Gender				0.244
Male	2697	2626 (45.3)	71 (40.8)	
Female	3278	3175 (54.7)	103 (59.2)	
Education				**<0.05**
Less than high school	5361	5223 (90.8)	138 (79.3)	
At least high school	563	527 (9.2)	36 (20.7)	
Marital status				0.125
Married	4453	4332 (74.7)	121 (69.5)	
Single/others	1522	1469 (25.3)	53 (30.5)	
BMI				0.25
<25.0	2738	2652 (46.4)	86 (51.2)	
25.0–29.9	2570	2499 (43.7)	71 (42.3)	
≥30.0	578	567 (9.9)	11 (6.5)	
Physical exercise				0.246
Light	1310	1265 (22.4)	45 (26.6)	
Moderate	2756	2686 (47.5)	70 (41.4)	
Vigorous	1752	1698 (30.1)	54 (32.0)	
Alcohol use				0.481
Never	1781	1725 (30.0)	56 (32.4)	
≤Twice a month	3509	3406 (59.2)	103 (59.5)	
≥Once per week	635	621 (10.8)	14 (8.1)	
Smoking				**0.004**
Never	3102	3029 (54.2)	73 (42.9)	
Past or current user	2655	2558 (45.8)	97 (57.1)	

†The total number for each variable might be different due to missing values

Table 2: Health and social capital characteristics of the study population at baseline (1981 and 1985) stratified by language group

Characteristic	N=5975†	Language group N (%)		
		Finnish N=5801	Swedish N=174	*P*-value
Self-rated health				0.12
Good	1311	1265 (22.2)	46 (26.9)	
Moderate	2921	2827 (49.5)	94 (55.0)	
Poor	1646	1615 (28.3)	31 (18.1)	
Chronic diseases				0.229
Yes	4127	4014 (69.2)	113 (64.9)	
No	1846	1785 (30.8)	61 (35.1)	
Social ties improved				0.324
Improved or new friend	743	717 (13.9)	26 (16.7)	
Not improved nor new friends	4575	4445 (86.1)	130 (83.3)	
Reciprocal civic trust				0.255
No	487	478 (9.4)	9 (6.5)	
Yes	4098	3982 (78.2)	116 (84.1)	
Can't say	644	631 (12.4)	13 (9.4)	
Civic engagement				0.287
Much	295	287 (6.1)	8 (6.2)	
Sometimes	2877	2971 (59.6)	86 (66.2)	
Almost never	1639	1603 (34.2)	36 (27.7)	

†The total number for each variable might be different due to missing values

Table 3: Health and social capital characteristics of the study population at follow-up (2009) stratified by language group

Characteristic	N=3093†	Language group N (%)		
		Finnish N=2069	Swedish N=64	*P*-value
Self-rated health				0.847
Good	938	909 (43.9)	29 (45.3)	
Moderate	733	710 (34.3)	23 (35.9)	
Poor	462	450 (21.7)	12 (18.8)	
Chronic diseases				**0.01**
Yes	1556	1521 (82.9)	35 (66.0)	
No	332	314 (17.1)	18 (34.0)	
Social ties improved				0.141
Improved or new friend	354	347 (23.3)	7 (14.3)	
Not improved nor new friends	1186	1144 (76.7)	42 (85.7)	
Reciprocal civic trust				0.998
No	163	158 (7.7)	5 (8.2)	
Yes	1747	1697 (82.6)	50 (82.0)	
Can't say	205	199 (9.7)	6 (9.8)	
Civic engagement				0.307
Much	9	9 (0.7)	0 (0.0)	
Sometimes	818	789 (57.5)	29 (69.0)	
Almost never	586	573 (41.8)	13 (31.0)	

† The total number for each variable might be different due to missing values

5.2 Regression analyses

The results of the three logistic regression models are presented first separately for each health and social capital variable, and thereafter for the summary variable of social capital.

5.2.1 Self-rated health

The Finnish and Swedish-speaking groups did not differ in terms of good self-rated health although the Finnish-speaking group of employees had lower probability of having good self-rated health at follow-up after 28 years. When controlling for age, gender, education, and marital status in the second model the difference in good self-rated health due to language group became smaller but still remained insignificant even in the final model when further adjustment was made for life-style, health and social capital related variables (Table 4).

Extended education was the only socio-demographic feature which was significantly associated with good self-rated health. The association was strong when in the second model with adjustments to socio-demographic characteristics and in the final model it remained but was slightly less pronounced, so that employees with less than high school education had a 24% lower probability of having good self-rated health in later life (OR from final model 0.76, 95% CI = 0.58-0.98).
Furthermore based on the results of the final model good self-rated health later in life was associated low BMI, vigorous physical exercise, no smoking, lack of chronic disease, trust and civic engagement.

Overweigh employees (BMI 25-29.9) had a 55% lower probability of being in good self-rated health than their normal weight (BMI<25) colleagues (OR 0.45, 95% CI=0.31-0.64). The same situation applied to obese employees (BMI≥30) who had a 41% lower probability of having good self-rated health in later life than the normal weight employees (OR 0.59, 95% CI 0,48 – 0,71). A similar probability was associated with exercise: those with moderate exercise had a 45% lower probability of being at good self-rated health than those who exercised vigorously (OR 0.55, 95% CI 0.42-0.71). Also employees who exercised only lightly had a 28% lower probability of being at good self-rated health at

older age than their more active colleagues (OR 0.72, 95% CI 0.59-0.88). The final life-style variable which had an impact on good self-rated health was smoking: past or current smokers had a 20% lower probability of being at good self-rated health than employees who had never smoked (OR 0.80, 95% CI 0-65 – 0.98).

The effect of chronic disease on good self-rated health is clear: those who had chronic disease had a 39% lower likelihood of considering themselves of being in good health than those who did not have chronic diseases (OR 0.61, 95% CI 0.51 – 0.74).

The effect of the social capital variables of reciprocal civic trust and civic engagement were both in the same direction, as those who had neither, had lower self-rated health. For trust the probability of good self-rated health was 34% lower (OR 0.66, 95% CI 0.52-0.82) for those who did not have and did not know having trust than for those who felt they had reciprocal civic trust. Those who almost never or never engaged themselves civically had a 24% lower probability of being at good self-rated health than the employees who rated themselves of have much or occasional civic engagement (OR 0.76, 95% CI 062 – 0.93).

Table 4: Odd ratio (OR) and 95% CI for good self-rated health due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for good self-rated health		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	0.85 (0.53 – 1.37)	0.96 (0.59 – 1.56)	0.89 (0.52 - 1.52)
Age			
44-48		1	1
49-53		0.88 (0.71 – 1.10)	1.00 (0.77 – 1.31)
54-58		1.16 (0.98 – 1.36)	1.29 (1.06 – 1.56)
Gender			
Male		1	1
Female		1.10 (0.93 – 1.29)	0.89 (0.72 – 1.11)
Education			
At least high school		1	1
Less than high school		**0.56 (0.44 – 0.70)**	**0.76 (0.58 – 0.98)**
Marital status			
Married		1	1
Single/others		0.96 (0.80 – 1.15)	0.92 (0.74 – 1.14)
BMI			
<25.0			1
25.0–29.9			**0.45 (0.31 – 0.64)**
≥30.0			**0.59 (0.48 – 0.71)**
Physical exercise			
Vigorous			1
Moderate			**0.55 (0.42 – 0.71)**
Light			**0.72 (0.59 – 0.88)**
Alcohol use			
Never			1
≤Twice a month			1.17 (0.80 – 1.73)
≥Once per week			1.20 (0.97 – 1.48)
Smoking			
No			1
Past or current user			**0.80 (0.65 – 0.98)**
Chronic diseases			
No			1
Yes			**0.61 (0.51 – 0.74)**
Social ties improved			
Improved or new friend			1
Not improved nor new friends			0.96 (0.74 – 1.25)
Reciprocal civic trust			
Yes			1
No or can't say			**0.66 (0.52 – 0.82)**
Civic engagement			
Much or sometimes			1
Never and almost never			**0.76 (0.62 – 0.93)**

Model I: crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

5.2.2 Chronic diseases

Contrary to good self-rated health the existence of chronic disease and language were strongly associated with each other in all the three models: The Finnish-speaking Finns had up to a three-fold increased probability of having chronic diseases compared to their Swedish-speaking fellow citizens at later life (Table 5). This finding is similar to the one done in the language stratified descriptive analysis of health and social capital characteristics of the study population at follow-up in 2009 (Table 3).

In a similar way as in the previous analysis estimating the relationship of good self-rated health with the other variables, the existence of chronic disease was associated with poorer self-rated health (Table 4, Table 5). Those who rated having moderate or poor health had a 30% higher probability of having chronic diseases than those who had good self-rated health (OR 1.30, CI 1.00 – 1.70).

The final model results indicate that the existence of chronic diseases at older age is also associated with BMI above 25 and lack of trust (Table 5). Overweight people had almost a three-fold probability of having a chronic disease than those with normal weight (OR 2.74, CI 1.47 – 5.10). For obese people the respective probability was 71% (OR 1.71, CI 1.31 – 2.24). Employees who did not have any reciprocal civic trust had a 61% higher probability of having a chronic disease than their trusting colleagues (OR 1.61, CI 1.15 – 2.24).

Table 5: Odd ratio (OR) and 95% CI for chronic diseases due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for chronic diseases		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	**2.49 (1.39 – 4.45)**	**2.64 (1.51 – 4.60)**	**2.97 (1.60 – 5.48)**
Age			
44-48		1	1
49-53		1.20 (0.87 – 1.65)	1.16 (0.80 – 1.70)
54-58		1.01 (0.80 – 1.27)	0.96 (0.74 – 1.25)
Gender			
Male		1	1
Female		1.06 (0.84 – 1.33)	1.23 (0.92 – 1.65)
Education			
At least high school		1	1
Less than high school		1.33 (0.99 – 1.78)	1.14 (0.82 – 1.60)
Marital status			
Married		1	1
Single/others		1.05 (0.81 – 1.37)	0.95 (0.70 – 1.29)
BMI			
<25.0			1
25.0–29.9			**2.74 (1.47 – 5.10)**
≥30.0			**1.71 (1.31 – 2.24)**
Physical exercise			
Vigorous			1
Moderate			1.15 (0.79 – 1.66)
Light			0.85 (0.65 – 1.12)
Alcohol use			
Never			1
≤Twice a month			1.01 (0.58 – 1.75)
≥Once per week			0.78 (0.58 – 1.04)
Smoking			
No			1
Past or current user			1.21 (0.91 – 1.61)
Self-rated health			
Good			1
Moderate or poor			**1.30 (1.00 – 1.70)**
Social ties improved			
Improved or new friend			1
Not improved nor new friends			0.79 (0.54 – 1.16)
Reciprocal civic trust			
Yes			1
No or can't say			**1.61 (1.15 – 2.24)**
Civic engagement			
Much or sometimes			1
Never and almost never			0.82 (0.62 – 1.07)

Model I: crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

5.2.3 Social ties

The Finnish and Swedish-speaking employees were not different from the perspective of social ties. Based on all of the models of the logistic regression analysis, however, the Finnish-speaking employees had a higher probability of better social ties in the 28 years of follow-up than their Swedish-speaking colleagues. In the last model in which the control was performed considering life-style, socio-demographic, health and social capital variables the difference was the smallest but remained insignificant (Table 6).

In the second model where language was supplemented with a control for age, gender, education, and marital status the odds of better social ties was explained by gender and education (Table 6). Women had a 33% higher probability of having better social ties in later life than men (OR 1.33, 95% CI 1.06 – 1.67). Also based on model II the probability of having better social ties was two-fold in employees with basic education than for those who had completed at least high school (OR 2.14, 95% CI 1.51-3.05).

Education continued to be strongly associated with better social ties in later life when the control was extended to the life-style, health and social capital features (Table 6). In Model III the association was similar to that found in Model II i.e. those who had basic education had a two-fold higher probability of having better social ties than their colleagues who had completed at least high school (OR 2.33, 95% CI 1.58 – 3.42). In the final analysis better social ties at older age were also associated with being married as those being single had a 26% lower probability of having better social ties (OR 0.74, 95% CI 0.55 – 1.00).

Based on the last model persons with moderate to poor health had a 30% lower probability of having good social ties than those employees who had good self-rated health (OR 0.70, 95% CI 0.54 – 0.91). Better social ties were also associated with civic engagement as those who never or almost never had any civic engagement had a 35% lower probability of having better social ties than their colleagues who sometimes or often had civic engagements (OR 0.65, 95% CI 0.50 – 0.85) (Table 6).

Table 6: Odd ratio (OR) and 95% CI for better social ties due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for better social ties		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	1.99 (0.89 – 4.44)	1.79 (0.79 – 4.03)	1.66 (0.72 – 3.83)
Age			
44-48		1	1
49-53		1.18 (0.87 – 1.61)	1.18 (0.84 – 1.66)
54-58		1.05 (0.84 – 1.32)	0.95 (0.74 – 1.21)
Gender			
Male		1	1
Female		**1.33 (1.06 – 1.67)**	1.17 (0.89 – 1.55)
Education			
At least high school		1	1
Less than high school		**2.14 (1.51 – 3.05)**	**2.33 (1.58 – 3.42)**
Marital status			
Married		1	1
Single/others		0.81 (0.62 – 1.05)	**0.74 (0.55 – 1.00)**
BMI			
<25.0			1
25.0–29.9			0.82 (0.49 – 1.35)
≥30.0			1.24 (0.97 – 1.58)
Physical exercise			
Vigorous			1
Moderate			0.91 (0.65 – 1.27)
Light			1.06 (0.81 – 1.37)
Alcohol use			
Never			1
≤Twice a month			0.86 (0.52 – 1.42)
≥Once per week			0.87 (0.66 – 1.13)
Smoking			
No			1
Past or current user			1.12 (0.86 – 1.46)
Self-rated health			
Good			1
Moderate or poor			**0.70 (0.54 – 0.91)**
Chronic diseases			
No			1
Yes			0.98 (0.76 – 1.25)
Reciprocal civic trust			
Yes			1
No or can't say			0.75 (0.56 – 1.01)
Civic engagement			
Much or sometimes			1
Never and almost never			**0.65 (0.50 – 0.85)**

Model I: crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

5.2.4 Reciprocal civic trust

The analysis results of the two first models indicate that good reciprocal civic trust would be a feature more typical to the Finnish-speakers than the Swedish-speakers. However, in the final model the association was the contrary. As none of the analysis results was significant and as the results were even conflicting, it is reasonable to conclude that good reciprocal civic trust and language are not associated as can be seen in Table 7.

In the second model with control for age, gender, education, and marital status, the odds of good reciprocal civic trust became explainable by the female gender only: women had a 78% higher likelihood of having reciprocal civic trust at older age when compared to men (OR 1.78, 95% CI 1.47 – 2.15).

Extending the control to the life-style, health and social capital features, good reciprocal civic trust at older age continued to be associated with the female gender: women had a 45% higher likelihood than men to have good reciprocal civic trust at older age (OR 1.45, 95% CI 1.12 – 1.88). Also having much or some civic engagement increased the odds of trust so that those with higher engagement had a 25% higher possibility of good reciprocal trust than those who had little or no civic engagement at baseline (OR 0.74, 95% CI 0.59 – 0.92) (Table 7).

Table 7: Odd ratio (OR) and 95% CI for good reciprocal civic trust due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for good reciprocal civic trust		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	1.24 (0.70 – 2.20)	1.29 (0.74 – 2.26)	0.87 (0.43 – 1.76)
Age			
44-48		1	1
49-53		0.87 (0.67 – 1.13)	0.81 (0.60 – 1.11)
54-58		0.89 (0.73 – 1.08)	0.93 (0.73 – 1.18)
Gender			
Male		1	1
Female		**1.78 (1.47 – 2.15)**	**1.45 (1.12 -1.88)**
Education			
At least high school		1	1
Less than high school		0.62 (0.60 – 1.27)	0.73 (0.51 – 1.04)
Marital status			
Married		1	1
Single/others		1.00 (0.80 – 1.27)	1.17 (0.88 – 1.55)
BMI			
<25.0			1
25.0–29.9			1.27 (0.81 – 1.99)
≥30.0			0.84 (0.67 – 1.05)
Physical exercise			
Vigorous			1
Moderate			0.99 (0.73 – 1.34)
Light			1.22 (0.96 – 1.57)
Alcohol use			
Never			1
≤Twice a month			0.90 (0.59 – 1.39)
≥Once per week			1.21 (0.94 – 1.57)
Smoking			
No			1
Past or current user			0.90 (0.70 – 1.16)
Self-rated health			
Good			1
Moderate or poor			0.92 (0.71 – 1.19)
Chronic diseases			
No			1
Yes			0.89 (0.70 – 1.12)
Social ties improved			
Improved or new friend			1
Not improved nor new friends			0.91 (0.65 – 1.26)
Civic engagement			
Much or sometimes			1
Never and almost never			**0.74 (0.59 – 0.92)**

Model I: Crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

5.2.5 Civic engagement

The Finnish-speaking Finns have a lower probability for high civic engagement than the Swedish-speakers do but as the difference between the two language groups was not significant it can be concluded that the two language groups do not differ in terms of civic engagement. The difference in civic engagement between the language groups was smaller when controlling for age, gender, education and marital status, but in the final model with further adjustments the difference was on the same level as in the first model. As for the first model, the result in the consecutive models were non-significant (Table 8).

After controlling for age, gender, education, and marital status the difference of high civic engagement at the 28 year follow-up become explainable by lower age, higher education, and the female gender but marriage did not affect civic engagement. The lowest age group which at the beginning of the study was 44-48 years had a 33% higher probability to be civically engaged than those persons who at baseline were 49-53 years (OR 0.67, 95% CI 0.50 – 0.89). The oldest age group's probability for high civic engagement was 27% lower than for the youngest age group in the 28 year follow-up (OR 0.73, 95% CI 0.59 – 0.90). Those with basic education only were 32% more likely to have little or no civic engagement than the individuals with a minimum of high school education (OR 0.68, 95% CI 0.52 – 0.90). For women the likelihood of having high civic engagement was three-fold compared to the respective likelihood for men (OR 3.52, 95% CI 2.86 – 4.33).

Women's higher likelihood to having high civic engagement remained on the same level (OR 2.91, 95% CI 2.25 – 3.75) also in the final model when the control was extended to life-style, health and social capital features finds. The associations were similar in relation to age and education (OR 0.67, 95% CI 0.49 – 0.91) i.e. the younger and those with higher education had more civic engagement.

Additionally the final model confirmed a relationship between high civic engagement and the variables vigorous exercise, low alcohol use, and no smoking (Table 8). The employees who exercised vigorously and did not use alcohol were 42% more likely to take part in civic engagement than those who moderately either exercised (OR 0.58, 95% CI 0.43 – 0.79) or used alcohol (OR 0.58, 95% CI 0.36 – 0.94). The effect of not smoking

was slightly minor, as higher civic engagement was 35% more likely among non-smokers than smoker (OR 0.65, 95% CI 0.51 – 0.83).

Table 8: Odd ratio (OR) and 95% CI for high civic engagement due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for high civic engagement		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	0.62 (0.32 – 1.21)	0.69 (0.35 – 1.35)	0.59 (0.27 – 1.26)
Age			
44-48		1	1
49-53		**0.67 (0.50 – 0.89)**	**0.67 (0.48 – 0.93)**
54-58		**0.73 (0.59 – 0.90)**	**0.69 (0.54 – 0.87)**
Gender			
Male		1	1
Female		**3.52 (2.86 – 4.33)**	**2.91 (2.25 – 3.75)**
Education			
At least high school		1	1
Less than high school		**0.68 (0.52 – 0.90)**	**0.67 (0.49 – 0.91)**
Marital status			
Married		1	1
Single/others		1.18 (0.93 – 1.51)	1.10 (0.83 – 1.44)
BMI			
<25.0			1
25.0–29.9			0.88 (0.58 – 1.33)
≥30.0			0.96 (0.76 – 1.21)
Physical exercise			
Vigorous			1
Moderate			**0.58 (0.43 – 0.79)**
Light			0.91 (0.71 – 1.18)
Alcohol use			
Never			1
≤Twice a month			**0.58 (0.36 – 0.94)**
≥Once per week			0.84 (0.65 – 1.09)
Smoking			
No			1
Past or current user			**0.65 (0.51 – 0.83)**
Self-rated health			
Good			1
Moderate or poor			0.78 (0.61 – 1.01)
Chronic diseases			
No			1
Yes			1.08 (0.86 – 1.37)
Social ties improved			
Improved or new friend			1
Not improved nor new friends			0.73 (0.51 – 1.04)
Reciprocal civic trust			
Yes			1
No or can't say			0.82 (0.63 – 1.06)

Model I: crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

5.2.6 Social Capital

Table 9 contains the results of testing the association of the summarized variable high social capital in 2009 with language, socio-demographic characteristics, life-style variables and social capital features. When controlling for language only it seems like the Swedish-speaking Finns would have a 15% higher likelihood of having high social capital than the Finnish-speaking Finns in municipal occupations. The result is not significant and it is also contrary to the model II results with additional control for age, gender, education, and marital status, based on which it seems that the Finnish-speakers would have a 20% higher likelihood of social capital. Once again the result is not significant as is the case with the last model which extends the control to life-style, health and features of social capital. The last model results are in line with the results of the first model. The outcome of all the three models is that high social capital in this study population is not associated with language (Table 9).

In the analysis controlling for age, gender, education, and marital status the odds of having high social capital is strongly linked with being young, female, and married at baseline with the respective likelihoods being 40% (OR0.60, 95% CI 0.36 – 0.99), almost four times more (OR 3.73, 95% CI 2.51 – 5.54) and double (OR 1.89, 95% CI 1.02 – 3.50) respectively. Higher education is almost significantly associated with high social capital, too (Table 9).

The strong association of social capital and gender remains after the control is extended to life-style, health and social capital features: women are more likely have higher social capital (OR 2.19, 95% CI 1.33 – 3.61). Furthermore high social capital in 2009 is associated with all the features of social capital at baseline: those who in the 1980's had improvements in their social ties, were trusting and engaged in activities possessed higher social capital also almost three decades later (Table 9). The linkage was strong with the likelihoods varying between 45-69%. The strongest association was linked to having improved social ties or a new friend (OR 0.31, 95% CI 0.11 – 0.88) and "weakest" with being trusting (OR 0.55, 95% CI 0.35 – 0.85). Respondents with civic engagement were 57% more likely to have higher social capital (OR 0.43, 95% CI 0.28 – 0.66).

Table 9: Odd ratio (OR) and 95% CI for high social capital due to language group and other background characteristics of the study participants

Characteristic	OR, 95% CI for high social capital		
	Model I	**Model II**	**Model III**
Language group			
Swedish	1	1	1
Finnish	0.85 (0.25 – 2.79)	1.20 (0.35 – 4.10)	0.47 (0.06 – 3.69)
Age			
44-48		1	1
49-53		**0.60 (0.36 – 0.99)**	0.68 (0.37 – 1.22)
54-58		0.89 (0.60 – 1.32)	0.89 (0.56 – 1.40)
Gender			
Male		1	1
Female		**3.73 (2.51 – 5.54)**	**2.19 (1.33 – 3.61)**
Education			
At least high school		1	1
Less than high school		0.56 (0.31 – 1.01)	0.72 (0.38 – 1.38)
Marital status			
Married		1	1
Single/others		**1.89 (1.02 – 3.50)**	1.83 (0.90 – 3.72)
BMI			
<25.0			1
25.0–29.9			0.83 (0.37 – 1.83)
≥30.0			0.92 (0.59 – 1.43)
Physical exercise			
Vigorous			1
Moderate			0.89 (0.50 – 1.57)
Light			1.18 (0.72 – 1.93)
Alcohol use			
Never			1
≤Twice a month			0.95 (0.41 – 2.20)
≥Once per week			0.92 (0.53 – 1.62)
Smoking			
No			1
Past or current user			0.71 (0.44 – 1.12)
Self-rated health			
Good			1
Moderate or poor			0,92 (0,55 – 1,54)
Chronic diseases			
No			1
Yes			0.77 (0.49 – 1.21)
Social ties improved			
Improved or new friend			1
Not improved nor new friends			**0.31 (0.11 – 0.88)**
Reciprocal civic trust			
Yes			1
No or can't say			**0.55 (0.35 – 0.86)**
Civic engagement			
Much or sometimes			1
Never and almost never			**0.43 (0.28 – 0.66)**

Model I: crude odd ratio

Model II: Adjusted for baseline demographic characteristics of the study population

Model III: Further adjustment for lifestyle and social capital related variables

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6 DISCUSSION AND CONCLUSIONS

6.1 Summary of main findings

One key finding of the study was that there was no significant differences in the health and social capital characteristics of the Finnish-speaking and Swedish-speaking language groups at baseline. However, there was a significant difference in chronic disease between the two language-groups at follow-up with the Finnish-speaking population having a higher likelihood of chronic disease compared to Swedish-speakers. The association became even stronger when adjusted for socio-demographic, life-style and social capital confounders. The language group comparison of the other health variable, self-rated health, was not statistically significant but, based on the result, the Swedish-speakers were more likely to have better self-rated health.

Although not statistically significant, the Swedish-speaking population group was more likely to have high social capital, high civic engagement and good reciprocal civic trust, but less likely to have better social ties compared to Finnish-speaking population group of the study. These findings indicate that the Swedish-speakers would have more social capital. Additionally, an important finding regarding social capital is that social capital in later life is strongly linked to the possession of social capital characteristics earlier in life.

High educational attainment as well as low BMI, high physical activity and not smoking as midlife life-style characteristics were associated with better self-rated health in later life was found in this study.

6.2 Strengths and limitations of the study

6.2.1 Strengths

The main strength of the study was the used FLAME dataset which is a high response-rate dataset with long prospective follow-up data on a large and representative sample of municipal employees for research on work, health, work ability, functional capacity and

perceived strain. The FLAME questionnaires cover a multitude of aspects of the respondents' lives, and enable data analysis from numerous perspectives as well as testing of associations and making of predictions.

One additional strength of the study is the analysis of the features of social capital both independently as well as a single summary variable social capital.

6.2.2 Limitations

The main limitation of the current study is that the analysed FLAME data was originally not intended to be used for capturing social capital. However, several questions contained features central to social capital, and thus the central social capital themes of social ties, trust and civic engagement could be assessed using the responses to the FLAME surveys of 1981, 1985, and 2009.

The construction of identical indicators for social capital for the longitudinal perspective must also be listed as one of the study limitations. Namely, as the questionnaires were not identical from the question nor the topic specific question formulation perspective across various years, the questions selected to construct the social capital variables for baseline and follow-up were limited to those questions which existed at both time points. For social ties and trust the questions were identical but for civic engagement the perspective of the selected questions differed slightly in the baseline and follow-up surveys.

Furthermore and partly due to the differences of the questionnaires as outlined above, the constructed social capital variables of social ties and trust are based on single questions only. Thus, they are more limited in the dimensions of the respective variables used by Hyyppä and Mäki (2001) which in the case of social ties and trust were based on four and two questions respectively. Despite of the limitations mentioned here, the social capital variables of this study can be considered to reflect the mentioned features of social capital in a reliable way.

Both examples above outline the challenges of comparing social capital captured in different studies as even if the different social capital variables assessed would be called the same, the content of these can slightly vary as is the case when comparing this study's

social capital to that of Hyyppä and Mäki (2001). Therefore caution should be remembered when comparing the results of this study to other social capital research.

An additional limitation of the study was the smaller proportion of Swedish-speaking population in the FLAME data. Only 174 persons (3%) of the original respondents in 1981 were Swedish-speaking and in 2009 number of the Swedish-speakers had decreased to 64 but the proportion was still the same i.e. 3%of those who replied to follow-up survey in 2009. Apart from being a small proportion of the study population, the proportion is also lower than the respective language ratios in the Finnish population at the time of the questionnaires: at the initiation of the study in 1981 the proportion of Swedish-speakers was 6.2% and in 2009 the proportion was 5.4% (Statistics Finland, 2014).

6.3 Validity of results

Differences in selected socio-demographic and life-style related characteristics of Finnish-speaking and Swedish-speaking municipal employees were evaluated at baseline. Based on the analysis, this study confirmed the higher educational attainment of the Swedish-speaking Finns also observed by Finnäs (2001) alone and together with Saarela (Finnäs & Saarela, 2003). No significant differences between the language groups concerning weight, physical exercise and alcohol were found, but there was a tendency for the Swedish-speakers to be less obese than the Finnish-speakers. These baseline observations are in line with respective findings on socio-demographic and life-style characteristics between the language groups (Helakorpi et al., 2009).

Comparing baseline and follow-up social capital variables - social ties, reciprocal civic trust and civic engagement - suggested that the Swedish-speakers were more engaged in civic activities, a finding which is supported by previous findings (Hyyppä & Mäki 2001, 2003).

The validity of the logistic regression analysis assessing the association of the health and social capital variables in later life with midlife socio-demographic, lifestyle, health and social capital variables are discussed in the following chapters.

6.3.1 Self-rated health

The two language groups did not differ in good self-rated health but there was a higher likelihood of Swedish-speakers to report good self-rated health (Table 4). Even though the result as such did not fully confirm previous studies which have reported that the Swedish-speakers had better health than their fellow Finns (Nyqvist et al., 2007; Helakorpi et al., 2009), the higher probability of the Swedish-speakers to report good self-rated health should not be disregarded.

Good self-rated health was associated with higher educational attainment, a finding which has been observed by both Kunst et al. (2005) and Rahkonen et al. (2007) in their studies. Good self-rated health in this study, similarly to the previous findings of Pisinger et al. (2009) and Foraker et al. (2011), was associated also with low BMI, vigorous physical exercise, and not smoking. Furthermore, good self-rated health was associated to lack of chronic disease, a finding which has been confirmed also previously in other studies (Cott et al., 1999; Molarius & Janson, 2002). Additionally good self-rated health was strongly associated with having trust and being engaged as it had been also in other studies (Kawachi et al., 1999; Nieminen et al., 2013).

6.3.2 Chronic diseases

The Finnish-speaking Finns' probability of having chronic diseases was almost threefold in comparison to the probability of chronic disease in the Swedish-speakers (Table 5). The association observed in this study is more robust than the respective one in previous studies by Hyyppä and Mäki (2001) comparing the two language groups.

The strong association between having chronic disease and reporting poor self-rated health reflected the study's previous finding of an association between good self-rated health and lack of chronic disease, and is in line with other evidence (Cott et al., 1999; Molarius & Janson, 2002). Like in this study, Fortin et al. (2014) had found that obesity (BMI > 25) was linked to chronic disease. Furthermore this study confirmed the finding of Kawachi et al. (1999) that chronic disease is linked to lack of trust.

6.3.3 Social ties

The two language groups of municipal employees did not differ in their quality of social ties but the Finnish-speaking Finns had a slightly higher probability for better social ties in the follow-up (Table 6). The association observed in this study is in line with a finding of Hyyppä and Mäki (2001) where Finnish-speakers had a higher probability for auxiliary friends when comparing the two language groups. As in this study, the result of Hyyppä and Mäki was not significant.

Better social ties were explainable by higher educational attainment, being married, having good self-rated health and active civic engagement. It would be logical to conclude that being active in the society would also mean that the person has more social ties, and this is supported by this study's finding of the linkage of better social ties and active civic engagement. The finding of an association of better social ties with good self-rated health in this study is supported by the findings Nieminen et al. (2013) who found in their study an independent association between social ties and self-rated health.

6.3.4 Reciprocal civic trust

The results regarding reciprocal civic trust between the two language groups were non-conclusive as in the two first models the Finnish-speaking Finns had a higher probability of trust than the Swedish-speakers but in the last model the results were opposite (Table 7). The result is in line with Hyyppä and Mäki (2001) who concluded that there was no significant association between trust and language.

In this study good reciprocal civic trust is explainable by the female gender and high civic engagement. Regarding the gender a similar but insignificant result has been observed in the research of Hyyppä and Mäki (2001). Also in the recent Finnish Health 2011 survey women were found to be more trusting than men (Koskinen et al., 2012).

6.3.5 Civic engagement

The Finnish-speaking Finns' probability to civic engagement was lower than for the Swedish-speakers but the difference was statistically not significant (Table 8). The

observation in this study is in line with the respective one in previous studies comparing the two language groups (Hyyppä & Mäki, 2001).

According to the results of the present study high civic engagement is strongly associated with the female gender. The finding in the present study is on a similar level as in the research of Nieminen et al (2013) but much stronger than in previous studies observing the two language groups (Hyyppä & Mäki, 2001). It is also contradictory with the results of the Health 2011 survey in which the engagement between genders was equal (Koskinen et al., 2012).

High civic engagement seemed to be more of a feature of the middle aged (44-48) which is in contradiction with other research in which the middle aged have been the least active and the older individuals have had a higher level of engagement (Koskinen et al., 2012). Furthermore higher education, more exercise, low alcohol use, and no smoking were associated with high civic engagement. The finding regarding the listed life-style variables is in line with previous research on the linkage of social capital features and health behaviours (Nieminen et al., 2013), as is the association of higher educational attainment and civic engagement (Putnam, 2000).

6.3.6 Social Capital

The Swedish-speaking Finns' probability of having higher social capital than the Finnish-speaking Finns could not be fully confirmed in the FLAME study population (Table 9). The result in this study is thus not in line with other studies exploring social capital differences in the two language groups (Hyyppä & Mäki, 2001; Hyyppä & Mäki, 2001; Nyqvist et al., 2007), and finding a correlation between speaking Swedish and higher amounts of social capital.

The FLAME population vaguely supports evidence that high social capital at later life could be connected to better health at midlife measured as self-rated health or chronic disease. It is possible that the differences in this outcome are accountable to the different study populations of the studies as in this study the focus has been on municipal employees across Finland whereas Hyyppä and Mäki (2001) as well as Nyqvist et al.

(2007) were focusing on bilingual municipalities of Ostrobothnia, an area which is rich in community social capital.

High social capital in 2009 was associated with all the features of social capital at baseline: those who in the 1980's had improvements in their social ties, were trusting and engaged in activities i.e. had high social capital also possessed it almost three decades later, and suggests that high social capital does not diminish with age.

Lastly being female was very strongly linked with having high social capital. The finding in this study is more robust than for example in the research of Hyyppä and Mäki (2001) who found that trust and social ties of both genders were on a similar level and for civic engagement the gender specific results varied according to the activity.

6.4 Relationship with previous studies

The inspiration to the current study came from the public discussion and publications by Markku T. Hyyppä who together with Juhani Mäki has studied the association of social capital and health. Their key research has been in evaluating can the health differences the Swedish-speaking Finns compared to the Finnish-speaking Finns be explained by the social capital (Hyyppä & Mäki, 2001). The measurement of social capital in the research of Hyyppä and Mäki (2001) was used as the basis for the variables constructed to measure social capital in this study.

6.5 Suggestion for the further research

In this study the aim was to identify if there was a difference in health and social capital FLAME population from the language perspective. A further option of study could be researching the existence of the linkage between health and social capital in the whole study population.

This study assessed the municipal employees' health and social capital from the private life perspective. Other Finnish research has explored the association of health and work

place social capital of municipal employees in a cross-sectional setting (Oksanen, 2009). The longitudinal FLAME data gives an excellent possibility to examine the association of work place social capital not only on health but also on work ability, functional capacity and perceived strain, and also to explore it as a predictor for these variables, and these analysis are to be conducted later.

6.6 Conclusions

This study aimed to assess socio-demographic, life-style, health and social capital differences of the Swedish-speaking Finns and the Finnish-speaking Finns as well as to examine if the language group predicts health and social capital. Based on the results of this study higher social capital was associated with better health. Swedish-speaking Finns were found to have better health in later life compared to Finnish-speaking Finns. Furthermore high social capital seems to be a lifelong feature.

This study did not fully confirm the findings of previous studies on higher social capital in Finland being indicative of belonging to the Swedish language group population. However, those possessing social capital and any of its features were linked to good self-rated health and the absence of chronic disease. Swedish speakers were more likely to possess a higher degree of social capital than Finnish-speaking Finns.

Study subjects with healthy life-style behaviours at midlife were rating their health good and also had less chronic diseases at old age indicating the importance of healthy life-styles also to the individual's future health.

Studied subjects who had high social capital at baseline also possessed high social capital after three decades later, which indicates that high social capital does not diminish with age and can be considered a lifelong feature.

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APPENDICES

Appendix 1: Putnam's Components of Comprehensive Social Capital Index

Components of comprehensive Social Capital Index	Correlation with Index
Measures of community organizational life	
Served on committee of local organization in last year (percent)	0,88
Served as officer of some club or organization in last year (percent)	0,83
Civic and social organizations per 1,000 population	0,78
Mean number of club meetings attended in last year	0,78
Mean number of group memberships	0,74
Measures of engagement in public affairs	
Turnout in presidential elections, 1988 and 1992	0,84
Attended public meeting on town and school affairs in last year (percent)	0,77
Measures of community volunteerism	
Number of non-profit (501[c]3) organizations per 1,000 population	0,82
Mean number of times worked on community project in last year	0,65
Mean number of times did volunteer work in last year	0,66
Measures of informal sociability	
Agree that "I spend a lot of time visiting friends"	0,73
Mean number of times entertained at home in last year	0,67
Measures of social trust	
Agree that "Most people can be trusted"	0,92
Agree that "Most people are honest"	0,84

Source: Table 4 from Robert Putnam's Bowling Alone: The Collapse and Revival of American Community published in 2000.

Appendix 2: Questions of the FLAME questionnaires used to construct the social capital variables

1. Baseline at 1981 or 1985

	Question	Variable
Social ties and integrity (1981)		
Have some of the following events occurred recently in your life:	92	
- *Your relationships have improved considerably*		A275
- *You have found a new close friend*		A276
Reciprocal civic trust (1985)		
Is there a person in your close circle with whom you can openly discuss your personal topics and problems?	87	B633
Civic engagement (1985)		
How much pleasure or satisfaction do the following hobbies and leisure activities bring to your life currently	84	
- *Work in associations and clubs*		B622
- *Spiritual events and religious activities*		B623
- *Art (e.g. music, movies, exhibitions)*		B627
- *Handicraft, wood work etc.*		B629

2. Follow-up in 2009

	Question	Variable
Social ties and integrity		
Have some of the following events occurred recently in your life:	58	
- *Your relationships have improved considerably*		ECA275
- *You have found a new close friend*		ECA276
Reciprocal civic trust		
Is there a person in your close circle with whom you can openly discuss your personal topics and problems?	56	EDCB633
Civic engagement		
How much pleasure or satisfaction do the following hobbies and leisure activities bring to your life currently	49	
- *Work in associations and clubs*		EDCA260
- *Spiritual events and religious activities*		EDC776
- *Art (e.g. music, movies, exhibitions)*		EDC781
- *Handicraft, wood work etc.*		EDCA261